ORDER NO. ARD-7903018C

Service Manual

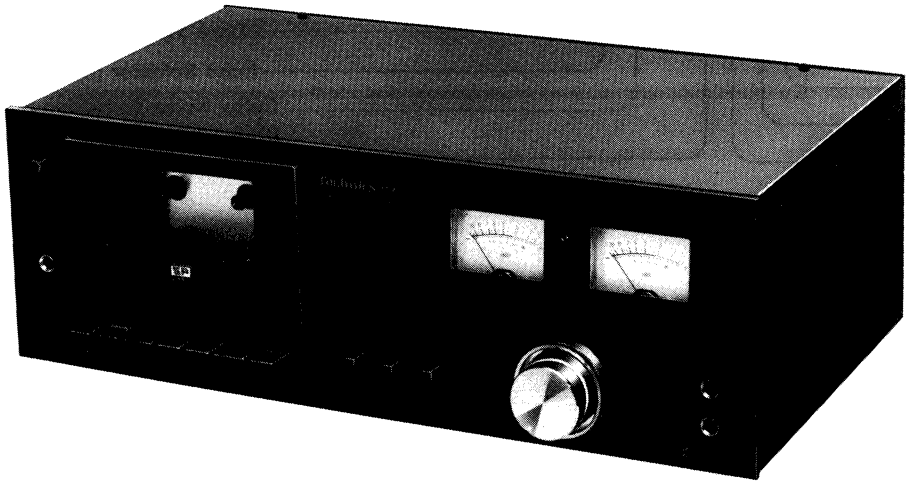
Cassette Deck

RS-M7

Front-Loading Vartical Hold Stereo Cassette Deck
with Full Auto-Stop Mechanism and Dolby NR

(Silver Type
Black Type)

DOLBY SYSTEM



This is the Service Manual for the following areas.

- [D] ..... For All European areas except United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.
- [A] ..... For Australia.

RS-631 MECHANISM SERIES

Specifications

Power requirement:	For All European areas except United Kingdom AC; 110/220 V, 50/60 Hz For Asia, Latin America, Middle East and Africa areas AC; 110/125/240 V, 50/60 Hz For Australia AC; 240 V, 50/60 Hz
Power consumption:	10 W
Motor:	Electronic control DC motor
Track system:	4-track 2-channel stereo recording and playback
Tape speed:	4.8 cm/s
Wow and flutter:	0.08% (WRMS), ±0.20% (DIN)
Frequency response:	CrO_2/Fe-Cr tape; 30 ~ 15,000 Hz 30 ~ 14,000 Hz (DIN) Normal tape; 30 ~ 14,000 Hz 30 ~ 13,000 Hz (DIN)
Signal-to-noise ratio:	Dolby* NR in; 66 dB (above 5 kHz) Dolby NR out; 56 dB (signal level = max. recording level, Fe-Cr/CrO_2 type tape)
Fast forward and rewind time:	Approx. 86 seconds with C-60 cassette tape
Input:	MIC; sensitivity 0.25 mV, input impedance 33 KΩ applicable microphone impedance 400Ω ~ 10 KΩ LINE; sensitivity 60 mV, input impedance 47 KΩ
Output:	LINE; output level 420 mV, output impedance 1 KΩ or less, load impedance 22 KΩ over HEADPHONE; output level 65 mV, load impedance 8Ω
Rec/pb connection:	5P DIN type; input sensitivity 0.25 mV, impedance 8.2 KΩ output level 420 mV, impedance 4.7 KΩ
Bias frequency:	80 kHz
Head:	2-head system; 1-super permalloy head for record/playback 1-double-gap ferrite head for erasure
Dimensions:	41.0 cm(W) × 14.2 cm(H) × 25.4 cm(D)
Weight:	4.5 kg

Specifications are subject to change without notice.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

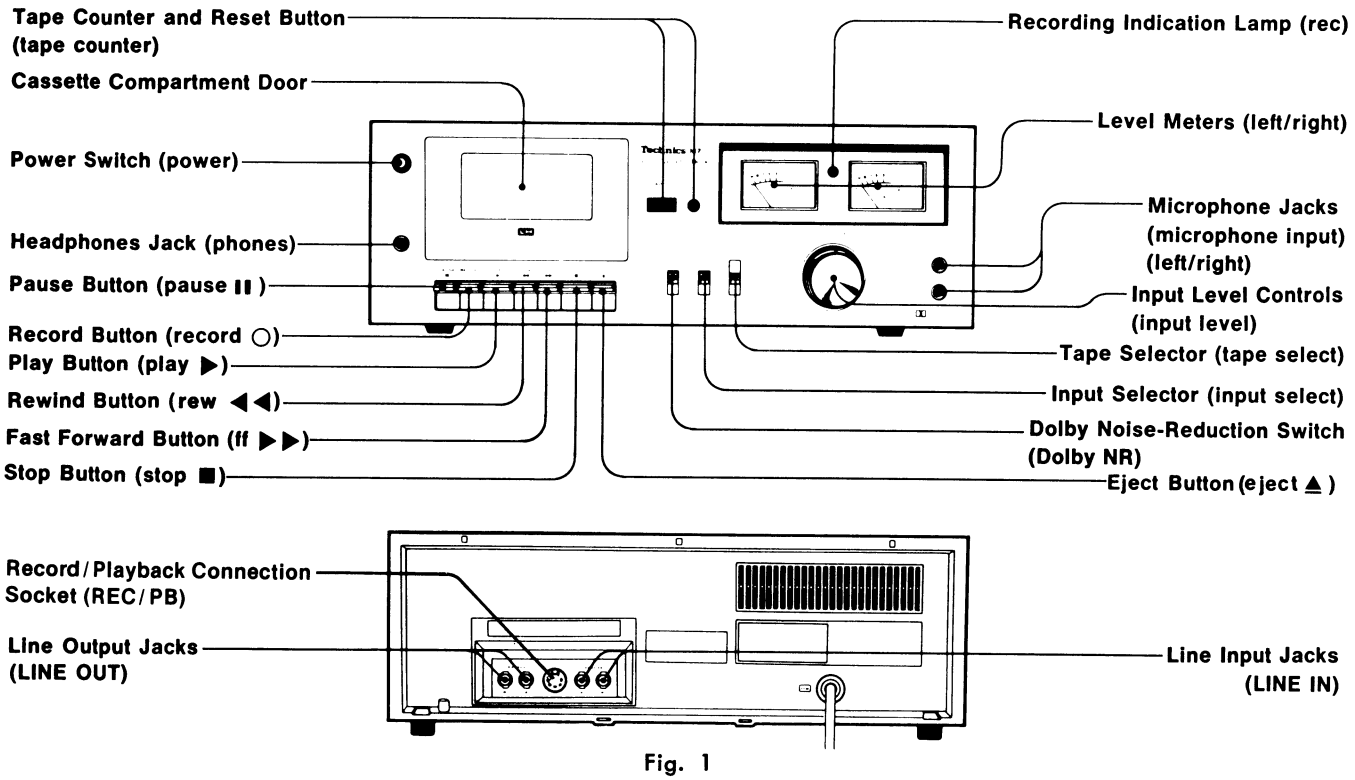


Fig. 1

DISASSEMBLY INSTRUCTIONS

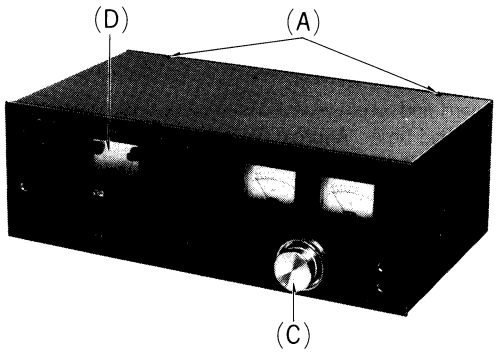


Fig. 2

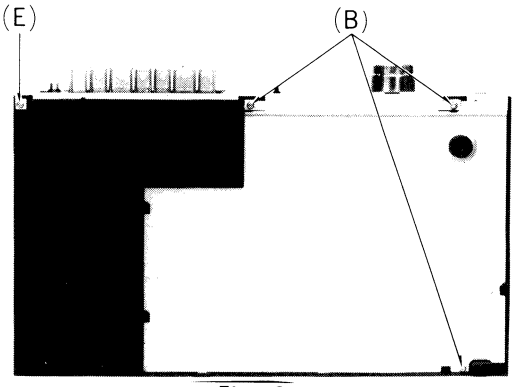


Fig. 3

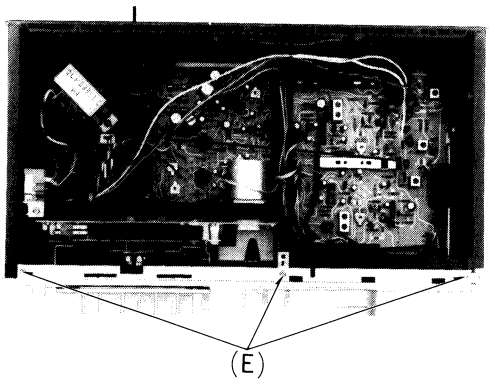


Fig. 4

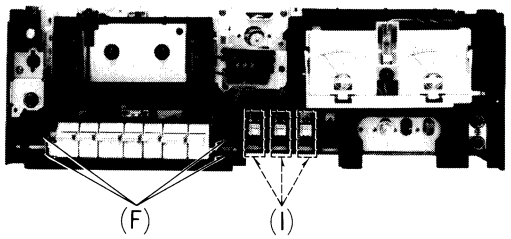


Fig. 5

RS-M7 RS-611 DEUTSCH

Messungen und Einstellungen

Anm.:

1. Für saubere Köpfe sorgen.
2. Für saubere Tonwelle und Andruckrolle sorgen.
3. Auf normale Raumtemperature schten: 20 ± 5°C.
4. Dolby-Schalter: Aus.
5. Bandwahl Schalter: Normal-Position.

Gegenstand	Messung und Einstellung
Senkrechtstellen des Kopfes Bedingung * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM	**Justage des Aufnahme/Wiedergabekopfes** 1. Den Meßaufbau zeigt Fig. 8. 2. Testband (QZZCFM, 8kHz) wiedergeben. 3. Einstellschraube (B) (Fig. 9) auf maximale Ausgangsspannung einstellen. 4. Beide Kanäle überprüfen und auf gleiche Ausgangsspannung einstellen. 5. Nach dem Abgleich Einstellschraube mit Lack sichern.
Bandgeschwindigkeit Bedingung * Wiedergabe Meßgerät: * Elektronischer Digitalzähler (RP-8067) * Testband...QZZCWAT	**Genauigkeit der Bandgeschwindigkeit** 1. Den Meßaufbau zeigt Fig. 10. 2. Testband (QZZCWAT 3000 Hz) wiedergeben und Ausgangssignal dem Zähler zuführen. 3. Frequenz messen. 4. Beträgt die auf dem Testband aufgezeichnete Frequenz 3000 Hz, so ergibt sich die Genauigkeit nach folgender Formel: Genauigkeit der Bandgeschwindigkeit = $= \frac{f-3000}{3000} \times 100(\%)$ worin f die gemessene Frequenz ist. 5. Die Messung soll im mittleren Teil des Bandes erfolgern. **NORMALWERT: ± 1,5%** **Einstellung:** 1. Den mittleren Teil des Testbandes wiedergeben. 2. Die Einstellschraube VR (Vgl. Fig. 21) so verstellen, aß eine Frequenz von 3000 Hz angezeigt wird. **Schwankung der Bandgeschwindigkeit:** Messung, wieoben beschrieben, für Anfang, mittleren Teil und Ende des Testbandes wiederholen und Schwankung wie folgt bestimmen: $\text{Schwankung} = \frac{f_1 - f_2}{3000} \times 100(\%)$ f_1 = Maximalwert f_2 = Minimalwert **NORMALWERT: 1%**
Wiedergabe-Verstärkung Bedingung * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM	1. Den Meßaufbau zeigt Fig. 8. 2. Standard-Frequenz (315 Hz) vom Testband wiedergeben und Ausgangsspannung messen. 3. Messung an beiden Kanälen durchführen. **NORMALWERT: 0,39 V** **Einstellung:** 1. Abweichungen können durch Abgleich von VR3 (linker Kanal) und VR4 (rechter Kanal) (S. Fig. 21) korrigiert werden. 2. Nach effolgtem Abgleich ist der Frequenzgang bei Wiedergabe erneut zu kontrollieren.

Gegenstand	Messung und Einstellung
Vormagnetisierung Bedingung * Aufnahme * Wenn die Vormagnetisierung eines Kanals eingestellt ist, kann die des anderen durchaus abweichend sein. * Wenn L5 oder L6 ersetzt wird, muß die Kernposition auf die Unterseite der Spule zurückgestellt und ansohließend der optimale Vormagnetisierungsstrom abgestimmt werden. Meßgerät: * Oszillograf * Röhrenvoltmeter	1. Den Meßaufbau zeigt Fig. 11. 2. Gerät auf "Aufnahme" und Bandwahlschalter auf "Normal" schalten. 3. Spannung vom Röhrenvoltmeter ablesen und Vormagnetisierungsstrom nach folgender Formel berechnen: Vormagnetisierungsstrom (A) = $= \frac{\text{Spannung am Röhrenvoltmeter (V)}}{\text{10 (Ohm)}}$ **NORMALWERT: 285 µA (Normal position) 240 µA (Fe-Cr position) 380 µA (CrO_2 position)** 4. L5 (linker Kanal) und L6 (rechter Kanal) abgleichen (S. Fig. 21).
Löschstrom Bedingung * Aufnahme Meßgerät: * Röhrenvoltmeter * Oszillograf * Widerstand (1 Ω)	1. 1- -Widerstand in die masseseitige Leitnng des Löschkopfs einfügen (Fig. 13). 2. Röhrenvoltmeter zum 1- -Widerstand parallelschalten. 3. Gerät auf Aufnahme schalten und Spannungsabfallam 1-Widerstand messen. 4. Löschstrom nach folgender Fromel ermitteln: Löschstrom (A) = $= \frac{\text{Die Spannung über beide Enden von R209 messen (V)}}{\text{0.1 (Ohm)}}$ **NORMALWERT: Größer als 40 mA (Normal position) Größer als 45 mA (Fe-Cr position) Größer als 55 mA (CrO_2 position)**
Gesamt-Verstärkung Bedingung * Aufnahme und Wiedergabe * NF-Eingangsregler...Max. * Standard-Eingangspergel Mikrofon −72 ± 3dB NF-Eingang −24 ± 3dB Meßgerät: * NF-Generator * Röhrenvoltmeter * Abschwächer * Oszillograf * Testband (Leerband) QZZCRA für Normal	1. Den Meßaufbau zeigt Fig. 14. 2. Gerät auf "Aufnahme", und Bandwalschalter auf Normal Position stellen. 3. Über den Abschwächer 1 kHz aus dem NF-Generator (−24 dB) dem NF-Eingang zuführen. 4. Den Abschwächer so einstellen, daß am NF-Ausgang stehen. 0,39 V (−7 dB) stehen. 5. Dieses Signal auf Testband (QZZCRA) aufnehmen. 6. Diese Aufnahme wiedergeben und prüfen, ob am NF-Ausgang 0,39 V stehen. 7. Ist das nicht der Fall, so sind VR5 (linker Kanal) und VR6 (rechter Kanal) entsprechend abzugleichen (S. Fig. 21). 8. Ab Punkt 2 wiederholen.

Gegenstand	Messung und Einstellung
Pegelmesser Bedingung * Aufnahme * Eingangsregler...MAX Meßgerät: * Röhrenvoltmeter * Oszillograf * NF-Generator * Abschwächer	1. Die Vervindungen des Prüfaubaus sind in Fig. 15. wiedergegeben. 2. Bei LINE IN ein 1 kHz-signal aus dem NF-Generator über den Abschwächer einspeisen. 3. Aufnahmepegeleinsteller VR so verstellen, daß der Monitorpegel an LINE OUT zu 0,39 V wird. 4. Einsteller VR501 (L-CH linker kanal) und VR502 (R-CH, rechter kanal) so einstellen, daß der Aussteuerungsanzeigemesser 0 dB anzeigt.
Gesmt-frequenzgang Bedingung * Aufnahme und Wiedergabe * Eingangsregler...Max. Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Testband (Leerband) QZZCRA für Normal QZZCRX für CrO_2 QZZCRY für FeCr	**Anm.:** Vor Messung und Abgleich des Gesamtfrequenzganges ist sicherzustellen, daß der Frequenzgang bei Wiedergabe korrekt ist (Vgl. entspr. Abschnitt). 1. Den Meßdaufbauzeigt Fig. 14. 2. Testband einlegen. 3. 1 kHz vom NF-Generator über den Abschwächer dem NF-Eingang zuführen. 4. Den Abschwächer so einstellen, daß der Eingangspegel – 20 dB des Standard-Aufnahmepegels beträgt (Standard-Aufnahmepegel – 24 dB). 5. Bei dem gleichen Pegel sind die Frequenzen 50 Hz, 100 Hz, 200 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, und 10 kHz (12 kHz für CrO_2 band order FeCr band) aufzunehmen. 6. Diese Aufnahme wiedergeben und dabei die Abweichungen der Pegel der einzelen Frequenzen vom 1 kHz-Pegel in dB bestimmen. 7. Prüfen, ob die Abweichungen innerhalb der in Fig. 16 angegebenen Toleranzen liegen. 8. Den Vormagnetisierungs- und den Entzerrungs-Wahlschalter in die CrO_2- und Fe-Cr-Positionen stellen. 9. Die gleichen Messungen durchführen. 10. Sicherstellen, daß alle Meßwerte innerhalb der in Fig. 17 und 18 dargestellten Grenzen liegen.
Gesamt-Frequenzgang (Als Groundlage für den Abgleich)	1. Werden die mittleren und hohen Frequenzen gemäßder durchgezogenen Linie in Fig. 19 zu stark wiedergegeben, so ist der Vormagnetisierungsstrom durch Drehen an L5 (linker Kanal) und L6 (rechter Kanal) zu erhöhen. 2. Erfolgt ein Abfall, wie ihn die Strichlinie in Fig. 19 zeigt, so ist an diesen Reglern entgegen der Pfeilrichtung zu drehen. **Anm.:** 1. Für die Messung des Vormagnetisierungsstromes sel auf den Abschnitt "Vormagnetisierung" hingewiesen. (S. 6.) **Abgleich 2-Aufnahme-Entzerrerspule** Verläuft der Frequenzgang bei mittleren Frequenzen flach und zeigt bei höheren Frequenzen einen scharfen Anstieg oder Abfall entsprechend Fig. 20, sind die korrekturspulen L3 (L-CH) und L4 (R-CH) für den Ausgleich bei Aufnahma mit normalem Magnetband.

Gegenstand	Messung und Einstellung
Dolby-Schaltung Bedingung * Aufnahme * Eingangsregler...Max. Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Oszillograf	1. Gerät in Stellung "Aufnahme" betreiben und Dolby-Schalter ausschalten. Dem NF-Eingang ein 5 kHz-Signal zuführen, daß an TP3 (linker Kanal) und TP4 (rechter Kanal) – 34,5 dB erhalten werden. 2. Prüfen, ob das Signal bei eingeschaltetem Dolby-Schalter um 8 (± 2,5) dB größer ist als bei ausgeschaltetem Dolby-Schalter.

RS-M7 RS-611 FRANCAIS

MESURES ET REGLAGES

NOTA:

1. Vérifiez que les têtes soiènt propres.
2. Vérifiez que le cabestan et le galet-pressure soient propres.
3. Température ambiante admissible: 20 ± 5°C.
4. Sélecteur de Dolby: OUT.
5. Sélecteur de bande: position normale.

SECTION	MESURES ET REGLAGES
Azimutage de tête CONDITION * Position lecture Equipment: * Voltmètre électronique * Oscillsscope * Bande étalon (azimutage)...QZZCFM	**Réglage de la tête d'enregistrement/lecture** 1. Branchez les appareils comme ci-dessous. 2. Lisez la bande étalon d'azimutage (QZZCFM, 8kHz). 3. Réglez la vis d'orientation (B) fig. 9 de la tête d'enregistrement/lecture pour obtenir le niveau maximal à la sortie LINE OUT. 4. Mesurez les deux canaux, et ajustez les niveaux à égalite de tension de sortie. 5. Après réglage, bloquez la vis par une goutte de vernis.
Vitesse de défilement CONDITION * Position lecture Equipement: * Compteur électronique numérique ou fréquencemètre numérique (RP8067) * Bande étalon...QZZCWAT	**Précision de la vitesse de défilement** 1. Branchez les appareils comme ci-dessous. (Voir fig. 10). 2. Lisez la bande étalon (QZZCWAT, 3000Hz) et appliquez le signal de sortie au fréquencemètre. 3. Mesurez sa fréquence. 4. Sur la base de 3000Hz, déteminez la valeur à l'aide de la formule. $\text{Précision de vitesse} = \frac{f-3000}{3000} \times 100)\%$ avec f = valeur mesurée 5. Effectuez la mesure sur la partie médiane de la bande. **Valeur normale: ± 1.5%** **Méthode de réglage** 1. Lisez la bande étalon (milieu). 2. Ajustez la vis de réglage de vitesse VR indiquée fig. 21 pour que la fréquence devienne égale à 3000Hz. **Eluctuations de vitesse de défilement** Faites les mesures de la même facon que ci-dessus (au début, au milieu et en fin de bande) et déterminez la différence entre les valeurs maximale et minimale, puis calculez comme suit. $\text{Fluctuations de vitesse} = \frac{f_1-f_2}{3000} \times 100)\%$ f_1 = valeur maximale f_2 = valeur minimale **Valeur normale: 1%**
Gain à la lecture CONDITION * Position lecture Equipement: * Voltmètre électronique * Oscilloscope * Bande éltalon...QZZCFM	1. Branchez les appareils selon la fig. 8. 2. Lisez la partie "niveau standard" de la bande étalon (QZZCFM, 315Hz) et mesurez le niveau de sortie, avec le voltmètre électronique, sur le jack LINE OUT. 3. Effectuez les mesures sur les deux canaux. **Valeur normal: 0.39V** **Réglage** 1. Si la valeur mesurée n'est pas correct, réglez VR3 (canal gauche) et VR4 (droit) (Voir fig. 21). 2. Après réglage, vérifiez à nouveau la "réponse en fréquence à la lecture".

SECTION	MESURES ET REGLAGES
Courant de prémagnétisation CONDITION * Position enregistrement * Lorsquón règle le courant de prémagnétisation pour un seul canal; le courant de láutre peut varier. * Lorsque L5 ou L6 est remplacé, prérègler la position du noyau au fond de la 3obine et puis rèajuster le courant de polarisation au maximum. Equipement: * Oscilloscope * Voltmètre électronique	1. Branchez les appareils comme ci-dessous. 2. Placez l'appareil en position enregistrement, le sélecteur de bande sur "normal" (pour bande normale). 3. Lisez la tension sur le voltmètre électronique et calculez le courant de prémagnétisation selon la formule. $\text{Courant de prémagnétisation (A)} = \frac{\text{Tension lue sur voltm. élec. (V)}}{10(\Omega)}$ **Valeur normale: 285μA (position normale)** **340μA (position Fe-Cr)** **380μA (position CrO_2)** 4. Réglez L5 (canal gauche) et L6 (canal droit) (voir emplacements des organes de réglage en Fig. 21).
Courant d'effacement CONDITION * Position enregistrement Equipement: * Voltmètre électronique * Oscilloscope * Résistance (1Ω)	1. Branchez la résistance de 1Ω entre la borne de masse de la tête déffacement et le fil de masse débranché (Voir fig. 13). 2. Branchez le voltmètre électronique aux bornes de la résistance de 1Ω . 3. Placez l'appareil en position enregistrement et mesurez la tension aux bornes de la résistance de 1Ω . 4. Déterminez le curant déffacement à l'aide de la formule suivante: $\text{Courant d'effacement (A)} = \frac{\text{La tension traverse les 2 extrémités du R209 (V)}}{0.1(\Omega)}$ **Valeur normale = pulse de 40mA (position normale)** **pulse de 45mA (position Fe-Cr)** **plus de 55mA (position CrO_2)**
Gain global CONDITION * Positions enregistrement/lecture * Commande de niveau LINE IN...MAX * Niveaux d'entrée normaux MIX – 72 ± 3dB LINE IN – 24 ± 3dB Equipement: * Générateur AF * Voltmètre électronique * Atténuateur * Oscilloscope * Bande étalon vierge QZZCRA pour type de bande normale	1. Branchez les appareils comme sur la fig. 14. 2. Placez l'appareil en position enregistrement, le sélecteur de bande sur position normale. 3. Appliquez un signal à 1kHz (– 24dB) du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 4. Réglez l'atténuateur pour que le niveau d'écoute simultanée sur LINE OUT soit de 0.39V (– 7dB). 5. Faites un enregistrement avec la bande étalon (QZZCRA). 6. Lisez la bande ainsi enregistrée, et vérifiez que la valeur lue sur le voltmètre électronique branché sur LINE OUT est bien de 0,39V. 7. Si la valeur mesurée est différente, réglez VR5 (canal gauche) et VR6 (droit) (voir fig. 21). 8. Recommencez à partir du palier (2).

SECTION	MESURES ET REGLAGES
Indicateur de niveau CONDITION * Position enregistrement * Commande de niveau ...MAX Equipement: * Voltmètre électronique * Oscilloscope * Générateur AF * Atténuateur	1. Branchez les appareil comme sur la fig.15. 2. Appliquez un signal de 1 kHz du générateur AF, à travers l'atténuateur, au jack déntrée LINE IN. 3. Réglez la commande de niveau déntrée LINE IN pour que le niveau découte simultanée sur LINE OUTsoit de 0.39V. 4. Réglez VR501 (canal ganche) et VR502 (droit) pour que les aiguilles des VU-mètres se placent sur 0VU.
Courbe de réponse globale CONDITION * Positions enregistrement/ lecture * Commande de niveau ...MAX Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Bande étalon vierge QZZCRA pour type normal QZZCRY pour CrO_2 QZZCRY pour FeCr	**Nota:** Avant de mesurer et régler, vérifiez que la courbe de réponse en lecture est correct (pour la méthode de mesure, reportez-vous au paragraph considéré). 1. Brahcez les appareils de mesure comme sur la fig. 14. 2. Mettez la bande vierge étalon en place et placez l'appareil en position enregistrement. 3. Appliquez un signal à 1 kHz du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 4. Réglez l'atténuateur pour que le niveau d'entrée soit inférieur de – 20dB au niveau étalon d'enregistrement (– 24dB). 5. Enregistrez les fréquences de 50Hz, 100Hz, 200Hz, 1 kHz, 2kHz, 4kHz et 8kHz, 10kHz (12kHz pour bande CrO_2/bande Fe-Cr) à niveau constant. 6. Lisez cet enregistrement ex exprimez en dB les différences entre le niveau de sortie de chaque fréquence et le niveau à 1 kHz. 7. Vérifiez que les valeurs mesurées s'inscrivent bien à l'intérieur du gabarit de courbe de réponse globale. 8. Mettre le sélecteur de polarisation et de compensation en position CrO_2 et Fe-Cr. 9. Effectuez les mesures comme ci-dessus. 10. Vérifiez que les valeurs mesurées s'inscrivent bien à l'intérieur du gabarit de courbe de réponse globale avec bande au CrO_2 et Fe-Cr ci-dessous.
Courbe de réponse globale (méthode normale de réglage)	1. Losque la courbe de réponse dépasse le gabarit entre le médium et l'aigu, comme indiqué par le trait plein de la fig. 19, augmentez le courant de prémagnétisation en tournant L5 (canal gauche) et L6 (droit). 2. Lorsqu'zlle est inferieure, comme indiqué par la ligne en trait interrompu, réduisez le courant de prémagnétisation en tournant L5 (canal gauche) et L6 (droit) en sens inverse. **Nota:** 1. Pour la mesure du courant de prémagnétisation, reportez-vous au paragraphe correspondant en page 6. **Réglage 2—Utilisation des bobines de correction dénregistrement** Lorsque la courbe de réponse est plate dans le médium et croît ou chute fortement dans l'aigu, comme indiqué par la fig. 20, réglez en tournant les bobines L3 (canal gauche) et L4 (droit) de correction dénregistrement avec les bandes normales.

SECTION	MESURES ET REGLAGES
Circuit Dolby CONDITION * Position enregistrement * Commande de niveau LINE IN...MAX Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Oscilloscope	1. Placez l'appareil en position enregistrement et le sélecteur Dolby en position OUT, puis appliquez un signal à 5kHz à l'entrée LINE IN pour obtenir – 34,5dB sur TP3 (canal gauche) et TP4 (droit). 2. Vérifiez que la valeur en position IN du sélecteur Dolby augmente de 8 (± 2.5) dB par rapport à celle obtenue en position OUT.

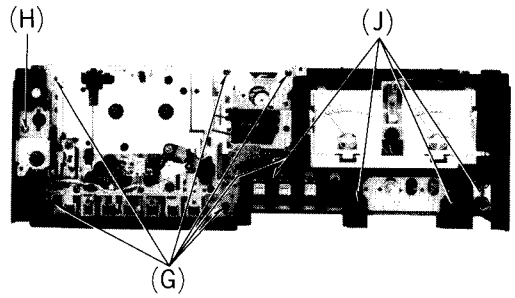


Fig. 6

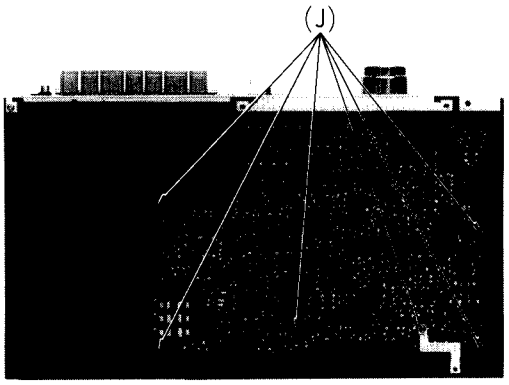


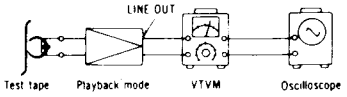
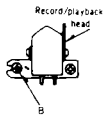
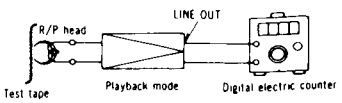
Fig. 7

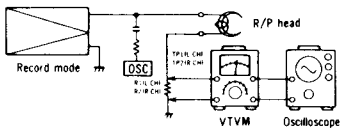
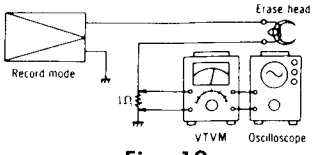
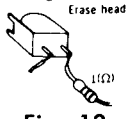
Procedure	To remove —— .	Remove —— .	Shown in fig. —— .
1	Case cover	• 2 black screws ·····(A)	2
2	Bottom cover	• 3 screws ·····(B)	3
3	Front panel	• Control knob·····(C) • Cassette lid ·····(D) • 4 screws ·····(E)	2 2 3, 4
4	Control button assembly and cassette holder	• 4 red screws·····(F)	5
5	Mechanism	• 6 red screws·····(G) • Headphone holding screw ·····(H)	6 6
5	Circuit board	• 3 switch shelters ·····(I) • 10 screws·····(J)	5 6, 7

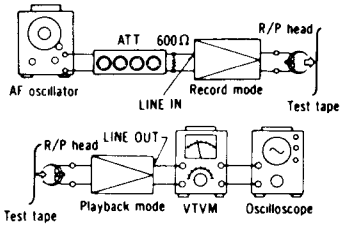
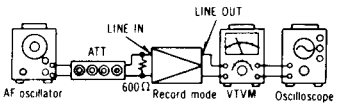
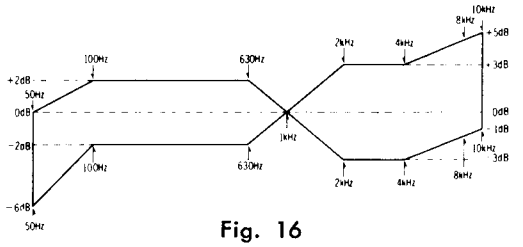
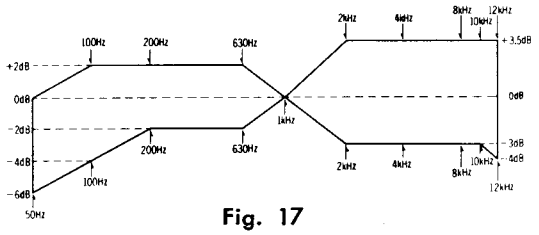
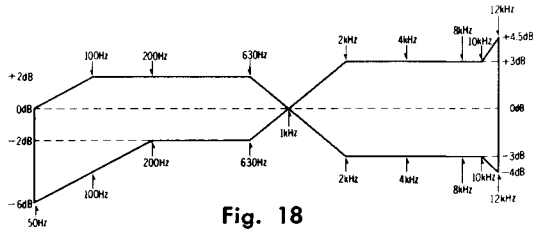
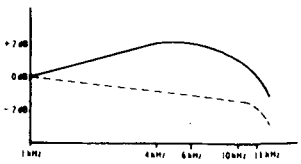
MEASUREMENT AND ADJUSTMENT METHODS

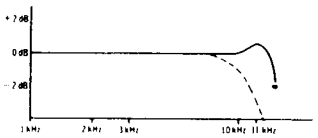
NOTE:

1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Judgeable room temperature: 20±5°C (68±9°F).
4. Dolby NR switch: OUT.
5. Tape selector: Normal position.

ITEM	MEASUREMENT & ADJUSTMENT
Head azimuth adjustment Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape (azimuth) ··· QZZCFM	1. Test equipment connection is shown in fig. 8. 2. Playback azimuth tape (QZZCFM 8kHz). 3. Adjust record/playback head angle adjustment screw (B) in fig. 9 so that output level at LINE OUT becomes maximum. 4. Measure both channels, and adjust levels for equal output. 5. After adjustment lock head adjustment screw with lacquer.  Fig. 8  Fig. 9
Tape speed Condition: * Playback mode Equipment: * Digital electronic counter or frequency counter * Test tape ··· QZZCWAT	**Tape speed accuracy** 1. Test equipment connection is shown in fig. 10. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f-3{,}000}{3{,}000} \times 100\ (\%)$ where, f = measured value  Fig. 10

ITEM	MEASUREMENT & ADJUSTMENT
	5. Take measurement at middle section of tape. **Standard value: ±1.5%** **Adjustment method** 1. Playback the test tape (middle). 2. Adjust so that frequency becomes 3,000 Hz. 3. Tape speed adjustment VR shown in fig. 21. **Tape speed fluctuation** Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3{,}000} \times 100\ (\%)$ f_1 = maximum value, f_2 = minimum value **Standard value: 1%**
Playback gain Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 8. 2. Playback standard recording level portion on test tape (QZZCFM 315 Hz), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. **Standard value: 0.39 V** **Adjustment** 1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 21 on page 5). 2. After adjustment, check "Playback frequency response" again.
Bias current Condition: * Record mode * When bias current is adjusted on one-channel only, note that bias current on the other channel may vary. * When L5 or L6 is the replaced, preset core position to bottom side of coill and then readjust optimum bias current. Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 11. 2. Place UNIT into record mode, and tape selector to normal position. 3. Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$  **Fig. 11** **Standard value: 285μA (Normal position), 340μA (Fe-Cr position), 380μA (CrO_2 position)** 4. Adjust L5 (L-CH) and L6 (R-CH) (See fig. 21 on page 5).
Erase current Condition: * Record mode Equipment: * VTVM * Oscilloscope * Resistor (1Ω)	1. Connect 1Ω resistor between the ground side terminal of erase head ground lead wire removed (See fig. 13). 2. Connect VTVM to both ends of 1Ω resistor. 3. Place UNIT into record mode, and measure voltage across the 1Ω resistor. 4. Determine erase current with the following formula: $\text{Erase current (A)} = \frac{\text{Voltage across both ends of 1}\Omega\text{ resistor}}{1\ (\Omega)}$  **Fig. 12**  **Fig. 13** **Standard value: More than 40 mA (Normal position), More than 45 mA (Fe-Cr position), More than 55 mA (CrO_2 position)**

ITEM	MEASUREMENT & ADJUSTMENT
Overall gain Condition: * Record/playback mode * Input level control ··· MAX * Standard input level; MIC ····· −72±3dB LINE IN ··· −24±3dB Equipment: * AF oscillator * VTVM * Oscilloscope * ATT * Test tape (reference blank tape) ··· QZZCRA for Normal	1. Test equipment connection is shown in fig. 14. 2. Place UNIT into record mode, and tape selector to normal position. 3. Supply 1kHz signal (−24dB) from AF oscillator, through ATT, to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.39V. 5. Using test tape, make recording. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.39V. 7. If measured value is not 0.39V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 21 on page 5). 8. Repeat from step (2).  Fig. 14
Level meter Condition: * Record mode * Input level control ··· MAX Equipment: * VTVM * Oscilloscope * AF oscillator * ATT	1. Test equipment connection is shown in fig. 15. 2. Supply 1kHz signal from the AF oscillator, through the ATT, to the LINE IN jack. 3. Adjust ATT so that the monitor level at LINE OUT becomes 0.39V. 4. Adjust VR501 (L-CH) and VR502 (R-CH) so that the level meters indicate 0dB.  Fig. 15
Overall frequency response Condition: * Record/playback mode * Input level control ··· MAX Equipment: * VTVM * AF oscillator * ATT * Test tape (reference blank tape) ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRY for Fe-Cr	1. Test equipment connection is shown in fig. 14. 2. Load reference blank test tape and place UNIT into record mode. 3. Supply 1kHz signal from AF oscillator through ATT to LINE IN. 4. Adjust ATT so that input level is −20dB below standard recording level (standard recording level ····· −24dB). 5. Record each frequency 50Hz, 100Hz, 200Hz, 1kHz, 2kHz, 4kHz, 8kHz and 10kHz (12kHz for CrO_2 and Fe-Cr tape) at the same level. 6. Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1kHz. 7. Make sure that the measured value is within the range specified in the overall frequency response chart. 8. Set the tape selector to CrO_2, Fe-Cr position. 9. Measure as same as manner above. 10. Make sure that the measured value is within the range specified in the overall frequency response chart for CrO_2 and Fe-Cr tape shown in fig. 17 and 18. **Overall frequency response chart (Normal)**  Fig. 16 **Overall frequency response chart (Fe-Cr)**  Fig. 17 **Overall frequency response chart (CrO_2)**  Fig. 18
Overall frequency response adjustment (As a standard for adjustment)	**Adjustment 1—Using bias current** 1. When the frequency response between the middle and high-frequency range becomes higher than the standard value, as shown by the solid line in fig. 19, increase the bias current by turning L5 (L-CH), L6 (R-CH). 2. When it becomes lower, as shown by dotted line, reduce the bias current by turning L5 (L-CH), L6 (R-CH).  Fig. 19

ITEM	MEASUREMENT & ADJUSTMENT
	Note: For the method of bias current measurement, refer to "Bias current adjustment" on page 3. **Adjustment 2—Using the peaking coil for recording equalization** When the frequency response is flat in the middle-frequency range and makes a sharp rise or drop in the high-frequency range, as shown in fig. 20, adjust by turning the peaking coil L3 (L-CH), L4 (R-CH) for normal tape recording equalization.  Fig. 20
Dolby NR circuit Condition: • Record mode • Input level control ··· MAX Equipment: • VTVM • AF oscillator • ATT • Oscilloscope	1. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain −34.5 dB at TP3 (L-CH), TP4 (R-CH) (frequency 5 kHz). 2. Confirm that the value at IN position is 8 (±2.5) dB greater than the value at OUT position of Dolby NR switch.

ADJUSTMENT PARTS LOCATION

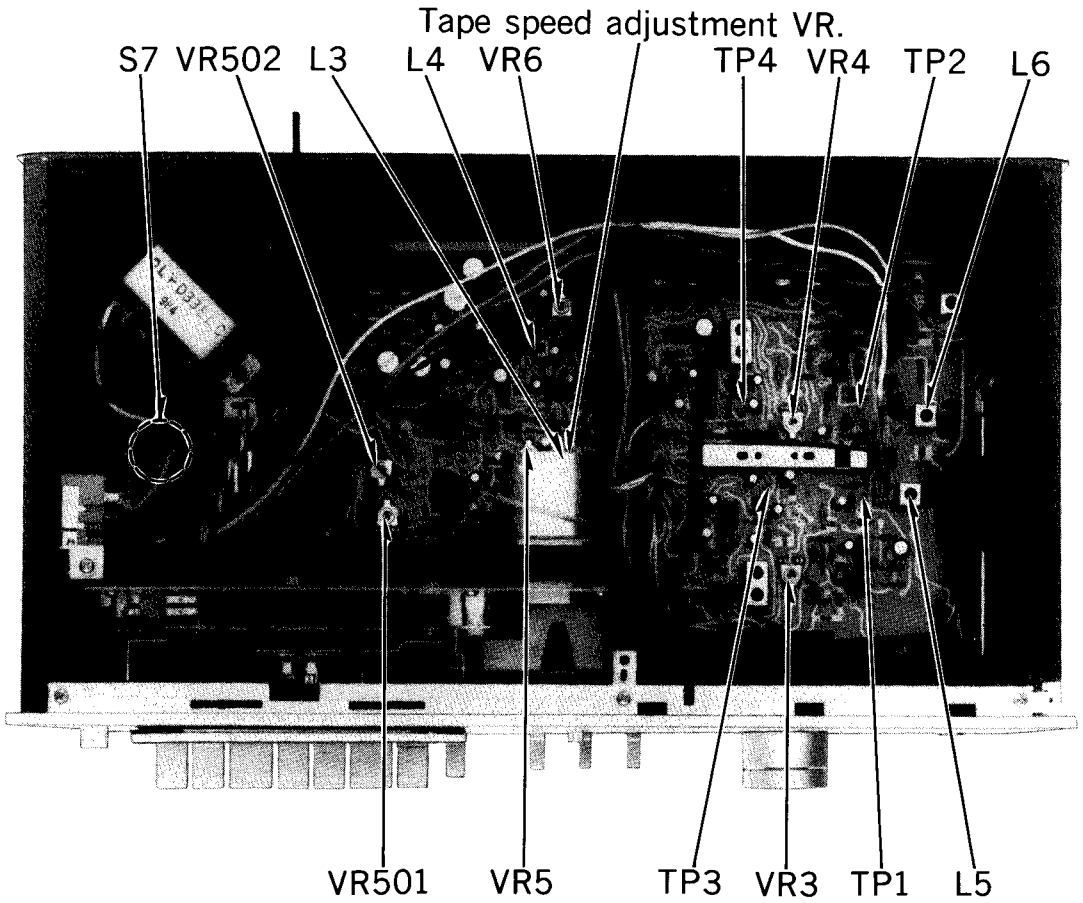
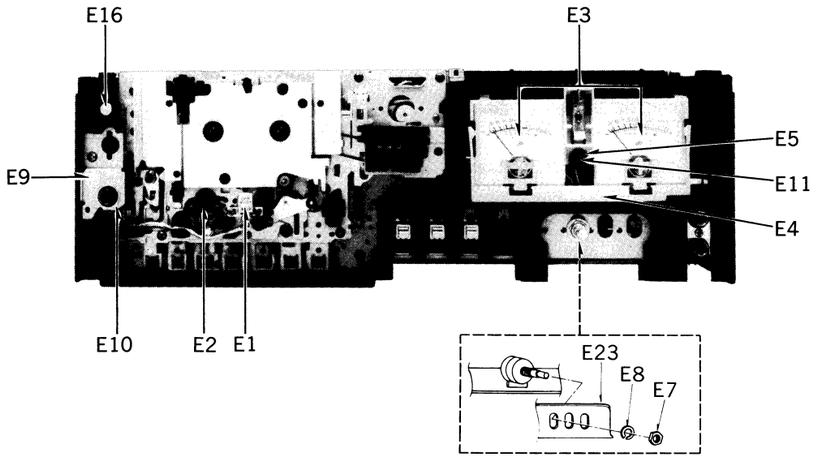


Fig. 21

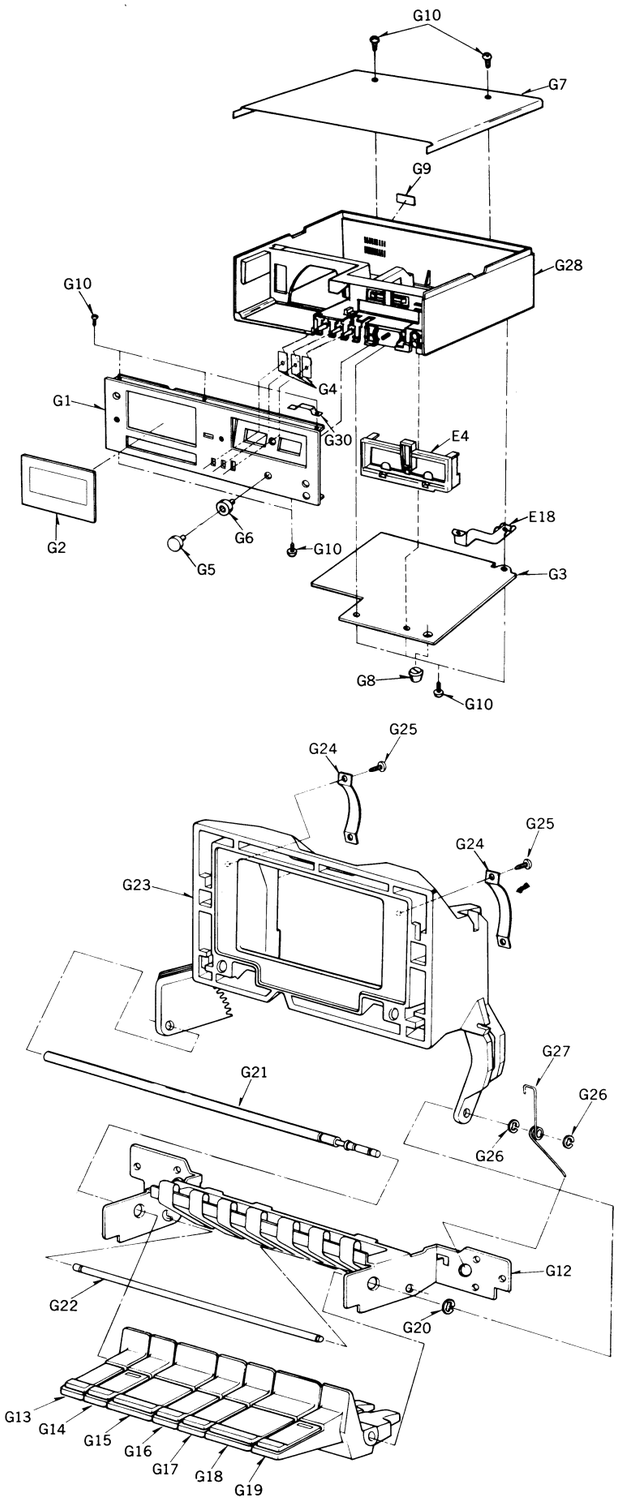
ELECTRICAL PARTS LOCATION



NOTE: △ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.		Part No.	Part Name & Description
		ELECTRICAL PARTS	
E1		QWY4113Z	Record/Playback Head
E2		QWY2122ZB	Erase Head
E3		QSL1108RNM	Level Meter
E4		QKJ0333	Level Meter Holder
E5		QBG1366	Rubber Bushing
E7		QNQ1039	Nut
E8		QWQ1133	Washer
E9		QMA3671	Headphone Jack Angle
E10		QNQ1070	Nut
E11		XAMQ22P10QN	Pilot Lamp
E12		QMA3672	Power Switch Angle
E13		QJS1922TN	6 Pin Housing
E14		QJT1054	Contact
E15		QJT0055	Pin Connector
E16	D A	QXB0531	Push Button Assembly
		"Silver Type"	
		※For All European areas except United Kingdom and for Australia.	
	D A	QXB0601	Push Button Assembly
		"Black Type"	
		※For All European areas except United Kingdom and for Australia.	
	N	QXB0499	"
		"Silver Type"	
		※For Asia, Latin America, Middle East and Africa areas.	
	N	QXB0637	"
		"Black Type"	
		※For Asia, Latin America, Middle East and Africa areas.	
E17		QTS1458	Earth Plate-A
E18		QTS1459	Earth Plate-B
E20	D A △	QBJ1425	Cord Bushing
		※For All European areas except United Kingdom	
	N △	QTD1129	"
		※For Australia.	
E21	D A △	QTD1164	Cord Clamper
		※For All European areas except United Kingdom.	
E22	D △	QFC1204M	AC Power Cord
		※For All European areas except United Kingdom.	
	N △	QFC1203M	"
		※For Asia, Latin America, Middle East and Africa areas.	
	A △	QFC1208M	"
		※For Australia.	
E23		QMA3670	Volume Angle
E26		QMA3673	Recording Angle
E27		QBS1122	Recording Wire
E28		QMN2381	Recording Shaft
E29		RME144ZA	Cord Clamper
E30		XTN3+10B	Tapping Screw ⊕3×10
E32		XTW3+12B	Tapping Screw ⊕3×12
E33		QJS1921TN	3 Pin Housing
E34		QJP1921TN	3 Pin Post
E35		QTS1460	Shield Plate
E36		QJP1922TN	6 Pin Post
E37	D △	XBAQ0003	Fuse (500mAT)
		※For All European areas except United Kingdom.	
E38	D △	XBAQ0007	Fuse (400mAT)
		※For All European areas except United Kingdom.	
E39	D △	QTF1054	Fuse Holder
		※For All European areas except United Kingdom.	
E40	N △	XBA2E03NS5	Fuse (500mAT)
		※For Asia, Latin America, Middle East and Africa areas.	

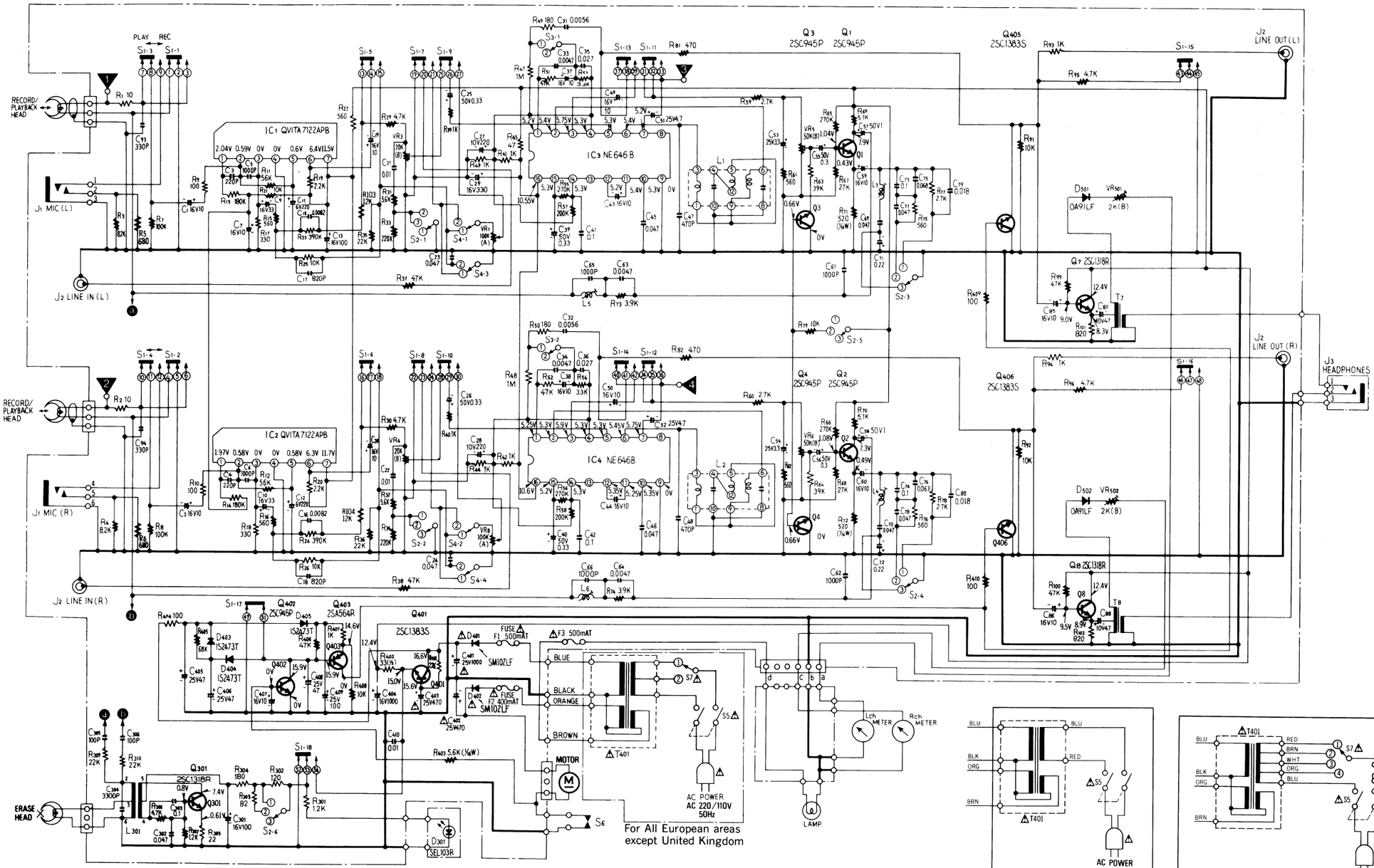
CABINET PARTS



NOTE: △ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.		Part No.	Part Name & Description
		CABINET PARTS	
G1		QYP0851	Front Panel Assembly
		"Silver Type"	
		QYP0850	Front Panel Assembly
		"Black Type"	
G2		QYF0375	Cassette Lid Assembly
		"Silver Type"	
		QYF0376	"
		"Black Type"	
G3		QGC1135	Bottom Board Assembly
G4		QGK2940	Switch Shelter
		"Silver Type"	
		QGK2938	"
		"Black Type"	
G5		QGT1452	Volume Knob-1
G6		QGT1440S	Volume Knob-2
G7		QGC1139	Case Cover
G8		QKA1078	Rubber Foot
G9	D	QGS2674	Main Name Plate
		※For All European areas except United Kingdom.	
	N	QGS2660	"
		※For Asia, Latin America, Middle East and Africa areas.	
	A	QGS2669	"
		※For Australia.	
G10		XTN3+10B	Tapping Screw ⊕3×10
G11		XTN4+10B	Tapping Screw ⊕4×10
G12		QXA0720	Push Button Holding Angle
G13		QGO1580	Pause Button
		"Silver Type"	
		QGO1593	"
		"Black Type"	
G14		QGO1579	Record Button
		"Silver Type"	
		QGO1592	"
		"Black Type"	
G15		QGO1578	Playback Button
		"Silver Type"	
		QGO1591	"
		"Black Type"	
G16		QGO1577	Rewind Button
		"Silver Type"	
		QGO1590	"
		"Black Type"	
G17		QGO1576	Fast Forward Button
		"Silver Type"	
		QGO1589	"
		"Black Type"	
G18		QGO1575	Stop Button
		"Silver Type"	
		QGO1588	"
		"Black Type"	
G19		QGO1574	Eject Button
		"Silver Type"	
		QGO1587	"
		"Black Type"	
G20		XUC4FT	Stop Ring 4φ
G21		QMN2382	Push Button Shaft-A
G22		QMN1861	Push Button Shaft-B
G23		QKF6011	Cassette Holder Assembly
G24		QBP1818	Holder Spring
G25		XTN26+5B	Tapping Screw ⊕2.6×5
G26		XUC3FT	Stop Ring 3φ
G27		QBN1641	Lid Spring
G28	D N	QKM1368K	Main Case
		※For Asia, Latin America, Middle East, Africa and All European areas except United Kingdom.	
	A	QKM1373K	"
		※For Australia.	
G29		QBW2066	Spacer
G30		QBP1848	Earth Spring
		ACCESSORIES	
A1		QEB0125	Connection Cord
A2	N △	QJP0603S	AC Plug Adaptor
		※For Asia, Latin America, Middle East and Africa areas.	
A3	N	QFTC30S011TZ	Demonstration Tape
		※For Asia, Latin America, Middle East and Africa areas.	
A4	D	QQT2575	Instruction Book
		※For All European areas except United Kingdom.	
	N	QQT2572	"
		※For Asia, Latin America, Middle East and Africa areas.	
	A	QQT2606	"
		※For Australia.	
		PACKINGS	
P1		QPN3821	Inside Carton
P2		QPA0459	Cushion-A
P3		QPA0460	Cushion-B
P4		XZB16X22A05	Poly Bag
P5		XZB40X60A02	"

SCHEMATIC DIAGRAM

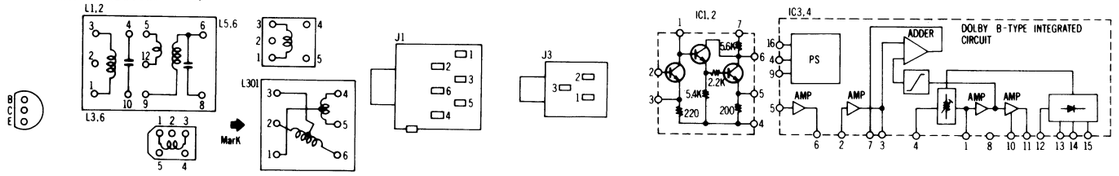


For All European areas except United Kingdom

For Australia.

For Asia, Latin America, Middle East and Africa areas.

TERMINATIONS (BOTTOM VIEW)



NOTE:

1. S1-1～S1-18 ..... Record/playback select switch (shown in playback position).
2. S2-1～S2-6 ..... Equalizer bias select switch.
   1 ··· CrO2, 2 ··· Fe-Cr, 3 ··· Normal.
3. S3-1, S3-2 ..... Dolby IN/OUT select switch (shown in OUT position).
4. S4-1～S4-4 ..... Input select switch.
   1 ··· MIC, 2 ··· LINE IN.
5. S5 ..... Power ON/OFF switch.
6. S6 ..... Motor, muting switch.
7. S7 ..... AC power voltage select switch.
8. VR3, VR4 ..... Playback gain adjustment VR.
9. VR5, VR6 ..... Recording gain adjustment VR.
10. VR7, VR8 ..... Input level control.
11. VR501, VR502 ..... Level meter adjustment VR.
12. L3, L4 ..... Recording equalizer adjustment coil.
13. L5, L6 ..... Bias current adjustment coil.
14. Resistor values are in ohms (Ω), 1/4 watt unless specified otherwise.
    K = 1,000Ω.
15. Capacitor values are in microfarads (μF) unless specified otherwise.
    P = Pico-farads.
16. The mark (▼) shows test point. e.g. ▼ = Test point 1.
17. All voltage values shown in circuitry are under no signal condition with volume control at minimum position.
    For measurement, use VTVM.

NOTE: RESISTORS

- ERD ··· Carbon
- ERG ··· Metal-oxide
- ERO ··· Metal-film
- ERX ··· Metal-film
- ERQ ··· Fuse type metallic
- ERC ··· Solid
- ERF ··· Cement

CAPACITORS

- ECG□ ····· Ceramic
- ECK□ ····· Ceramic
- ECC□ ····· Ceramic
- ECF□ ····· Ceramic
- ECQM ····· Polyster
- ECQE ····· Polyster
- ECQF ····· Polypropylene
- ECE□ ····· Electrolytic
- ECE□N ··· Non polar electrolytic
- ~~ECQS~~ ····· Polystyrene
- ECS□ ····· Tantalum

Ref. No.	Part No.
RESISTORS	
R1, 2	ERD25TJ100
R5, 6	ERD25TJ681
R9, 10	ERD25TJ101
R13, 14	ERD25TJ184
R17, 18	ERD25TJ331
R19, 20	ERD25TJ222
R23, 24	ERD25TJ394
R25, 26	ERD25TJ103
R27	ERD25TJ271
R31, 32	ERD25TJ562
R37, 38	ERD25TJ473
R41, 42, 43, 44	ERD25TJ102
R45	ERG12ANJ470
R47, 48	ERD25TJ105
R49, 50	ERD25TJ181
R53, 54	ERD25TJ332
R63, 64	ERD25TJ393
R75, 76	ERD25TJ561
R77, 78	ERD25TJ272
R93, 94	ERD25TJ102
R101, 102	ERD25TJ821
R103, 104	ERD25TJ123
R301	ERD25TJ122
R302	ERG12ANJ121
R303	ERD25TJ820
R304	ERG12ANJ181
R305	ERD25TJ220
R309, 310	ERD25TJ223
R401	ERD25TJ222
R402	ERG12ANJ330
R404	ERG12ANJ101
R407	ERD25TJ102
VARIABLE RESISTORS	
VR3, 4	EVLS3AA00B24
VR5, 6	EVLS3AA00B54
VR7, 8	EWKN3AF21A15
VR501, 502	EVLS3AA00B23
CAPACITORS	
C1, 2	ECEA16Z10
C3, 4	ECCD1H221K
C5, 6	ECKD1H102ZF
C7	ECEA1HS100
C9, 10	ECEA1CS330
C11, 12	ECEA1AS221
C13	ECEA1ES101
C15, 16	ECFTD822KVY
C17, 18	ECKD1H821KB
C19, 20	ECEA1HS100
C21, 22	ECFTD103KVY
C23, 24	ECFTD473MXY
C25, 26	ECEA50MR33
C27, 28	ECEA1AS221
C29	ECEA1CS331
C31, 32	QCQG05562JZ
C33, 34	QCQG05472JZ
C35, 36	QCQG05273JZ
C37, 38	ECEA1HS100
C39, 40	ECEA50ZR33
C41, 42	ECFWD104KXY
C43, 44	ECEA1HS100
C45, 46	ECFTD473MXY
C47, 48	ECKD1H471KB
C49, 50	ECEA1HS100
C51, 52	ECEA25Z4R7
C53, 54	ECEA50Z3R3
C55, 56	ECEA50ZR1
C57, 58	ECEA1HS010
C59, 60	ECEA1HS100
C61, 62	ECKD1H102MD
C63, 64	ECFTD472KVY
C65, 66	ECQS1122KZ
C69, 70	ECFTD473KXY
C71, 72	ECEA50ZR22
C73, 74	ECFWD104KXY
C75, 76	ECFTD683KXY
C77, 78	ECFTD473KXY
C79, 80	ECFTD183KVY
C85, 86	ECEA1HS100
C87, 88	ECEA1AS470
C93, 94	ECCD1H331K
C301	ECEA1ES101
C302	ECFTD473KXY
C303	ECFWD104KXY
C304	ECQS1332KZ
C305, 306	ECCD1H101K
C401 △	ECEA1ES102
C402, 403 △	ECEA1ES471
C404	ECEA1CS102
C405, 406	ECEA1ES470
C407	ECEA1HS100
C408	ECEA25Z4R7
C409	ECEA1ES101
C410	ECKD1H103ZF
TRANSISTORS	
Q1, 2, 3, 4	2SC1684
Q7, 8, 301	2SC1318
Q401	2SC1383
Q402	2SC1684
Q403	2SA564
Q405, 406	2SC1383
DIODES & RECTIFIERS	
D301	SEL103R
D401, 402 △	SM102
D403, 404, 405	1S2473T
D501, 502	0A91
INTEGRATED CIRCUITS	
IC1, 2	QVITA7122BPB
IC3, 4	NE646B

SPECIFICATIONS

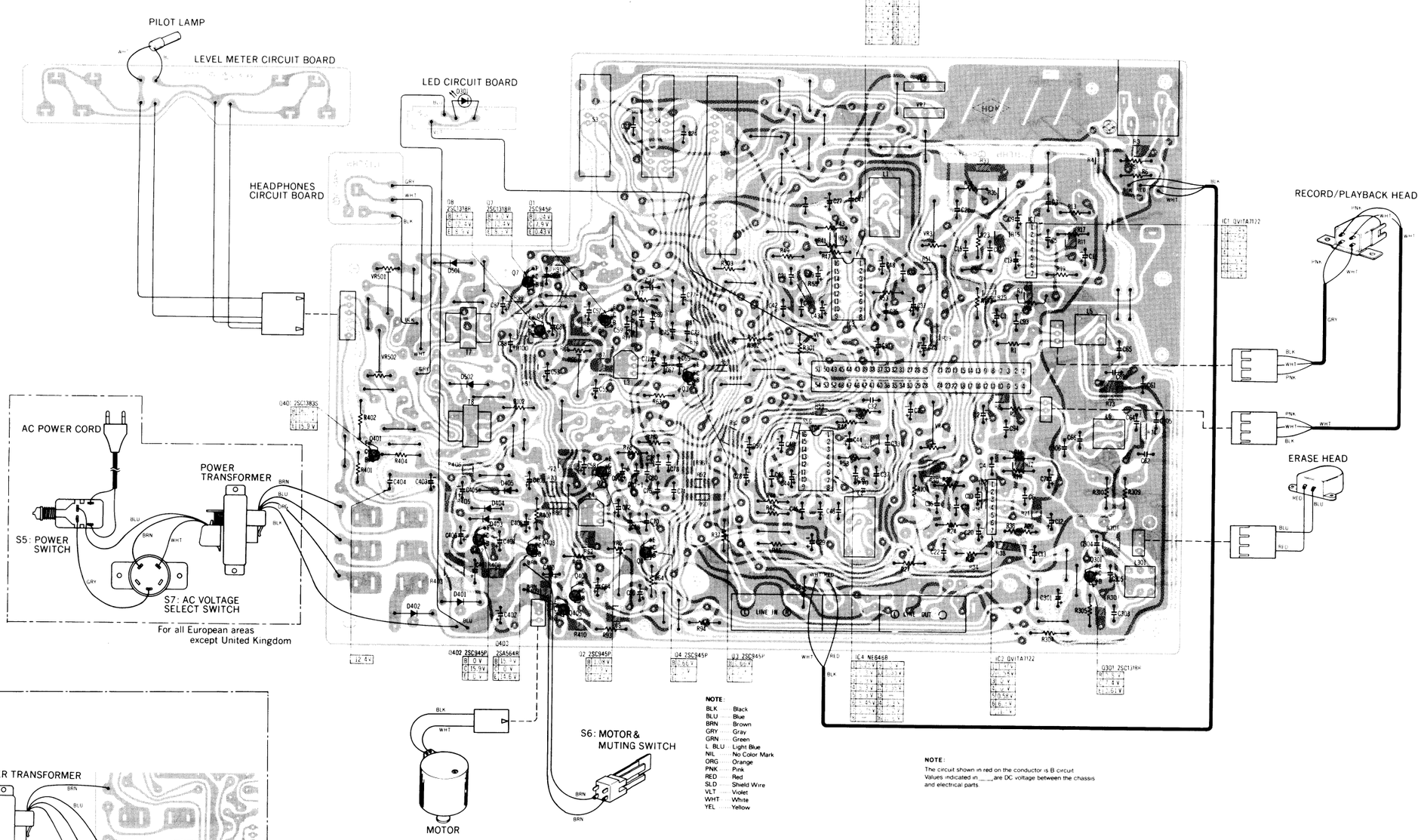
* Input level control ··· MAX

Playback S/N ratio Tast tape ··· QZZCFM	More than 45dB
Overall distortion Test tape ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRY for Fe-Cr	Less than 3% (Normal) Less than 4% (Fe-Cr, CrO_2)
Overall S/N ratio Test tape ··· QZZCRA	More than 43dB (without NAB filter)

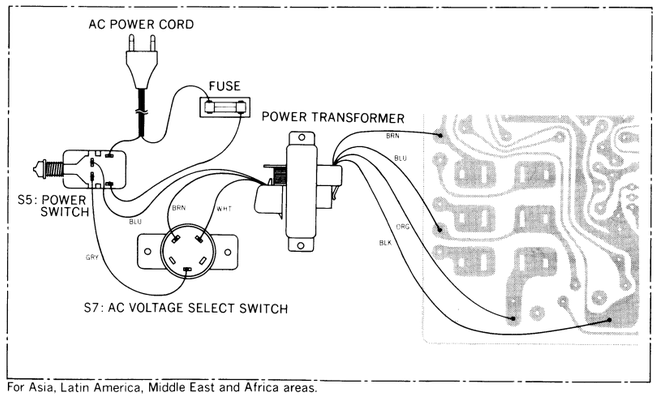
WIRING CONNECTION DIAGRAM

NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description
		TRANSFORMERS
T7, 8	QLT2D26X	Headphone Transformer
T401 [D] ⚠	QLPD33ELC	Power Transformer
	*For All European areas except United Kingdom.	
[N] ⚠	QLPN48ELC	"
	*For Asia, Latin America, Middle East and Africa areas.	
[A] ⚠	QLPA47ELC	"
	*For Australia.	
		COILS
L1, 2	QLM9Z7	MPX Filter
L3, 4	QLQM0333	Record Equalizer Coil
L5, 6	QLQC0331	Bias Trap Coil
L301	QLB0188	Bias Oscillation Coil
		SWITCHES
S1	QSSI205T	Slide Switch (Record/Playback Select)
S2	QES1490	Lever Switch (Tape Select)
	"Silver Type"	
	QES1485	"
	"Black Type"	
S3	QES1492	Lever Switch (Dolby IN/OUT Select)
	"Silver Type"	
	QES1487	"
	"Black Type"	
S4	QES1491	Lever Switch (Input Select)
	"Silver Type"	
	QES1486	"
	"Black Type"	
S5 [D] [A] ⚠	QSW2228A	Power Switch
	*For All European areas except United Kingdom and for Australia.	
[N] ⚠	QSW1206AA	"
	*For Asia, Latin America, Middle East and Africa areas.	
S6	QSB0186	Leaf Switch (Muting Switch)
S7 [D] ⚠	QSR1409H	AC Power Voltage Select Switch
	*For All European areas except United Kingdom.	
[N] ⚠	QSR1407H	"
	*For Asia, Latin America, Middle East and Africa areas.	
		JACKS
J1	QJA0257H	Microphone Jack
J2	QEJ5002S	Line IN/OUT (DIN)
J3	QJA0249C	Headphone Jack



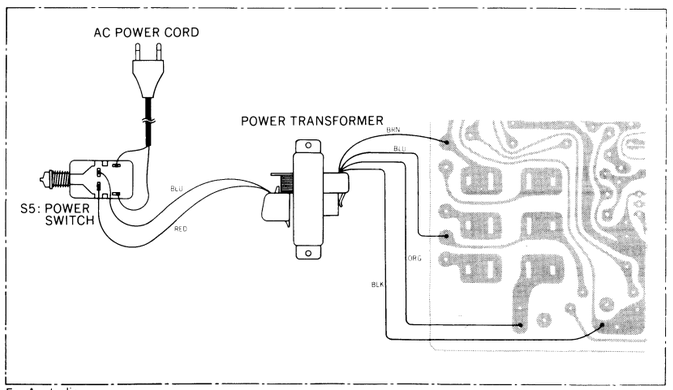
For all European areas except United Kingdom



For Asia, Latin America, Middle East and Africa areas.

NOTE:
BLK ... Black
BLU ... Blue
BRN ... Brown
GRY ... Gray
GRN ... Green
L. BLU ... Light Blue
NIL ... No Color Mark
ORG ... Orange
PNK ... Pink
RED ... Red
SLD ... Shield Wire
VLT ... Violet
WHT ... White
YEL ... Yellow

NOTE:
The circuit shown in red on the conductor is B circuit.
Values indicated in ____ are DC voltage between the chassis and electrical parts.

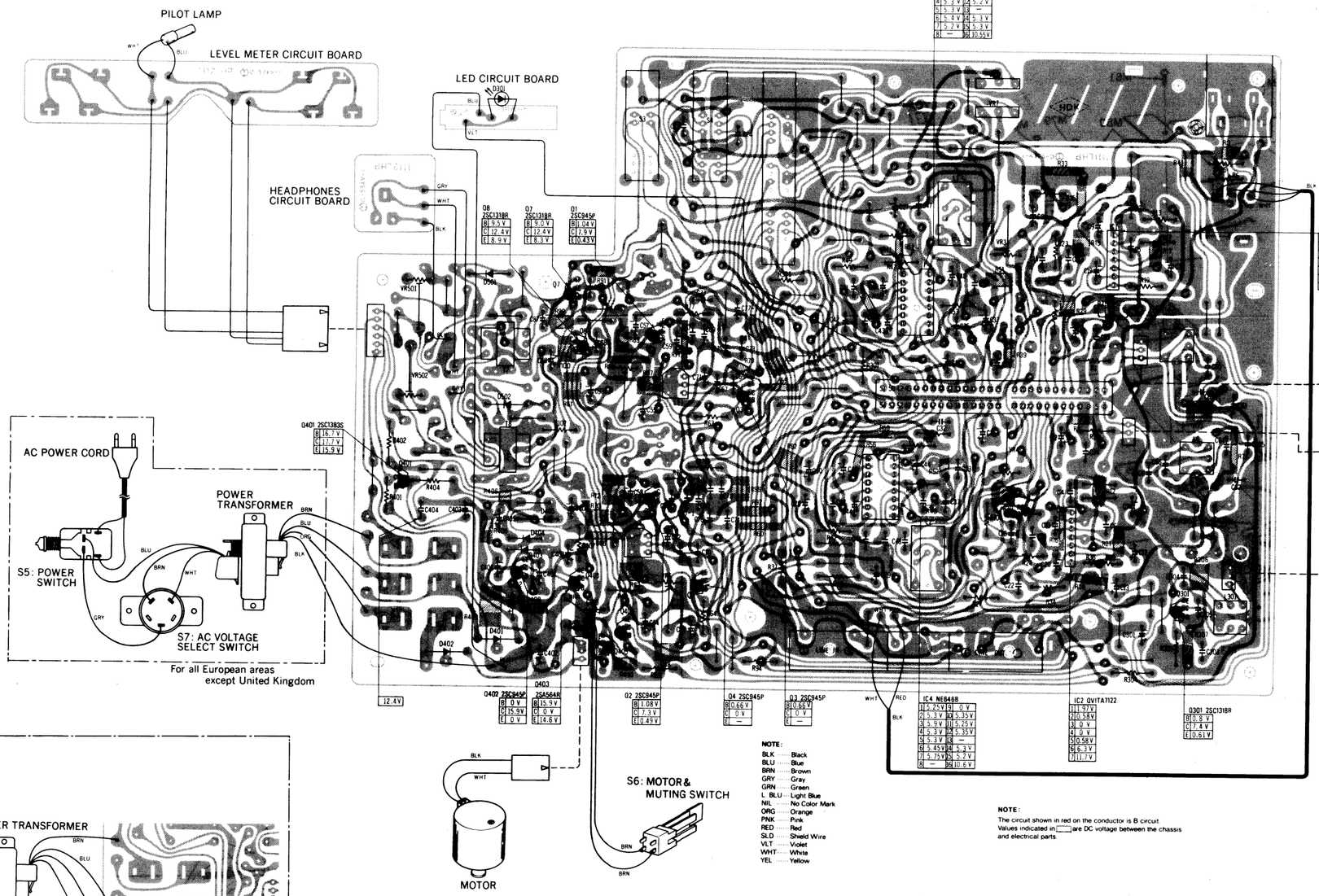


For Australia.

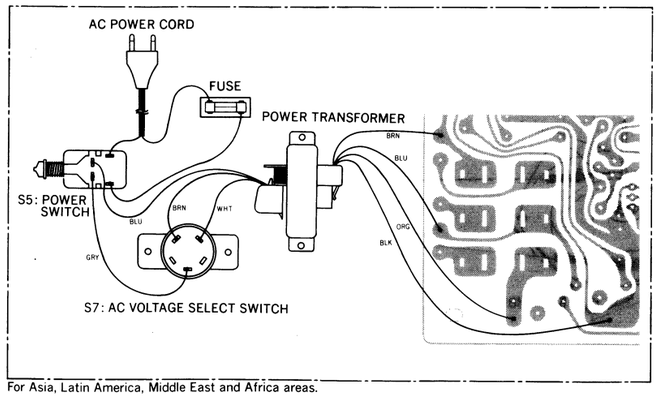
WIRING CONNECTION DIAGRAM

NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

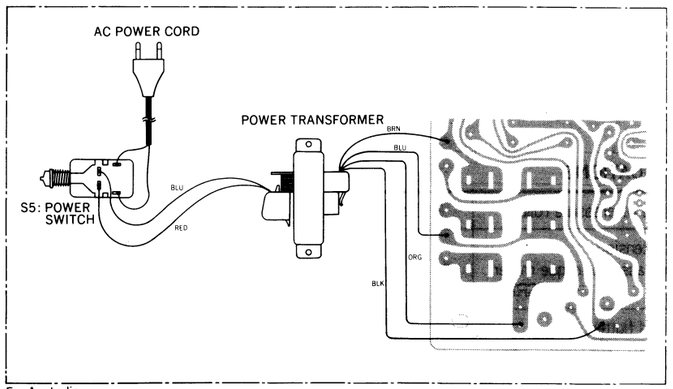
Ref. No.	Part No.	Part Name & Description
		TRANSFORMERS
T7, 8	QLT2D26X	Headphone Transformer
T401 [D] ⚠	QLPD33ELC	Power Transformer
	*For All European areas except United Kingdom.	
[N] ⚠	QLPN48ELC	"
	*For Asia, Latin America, Middle East and Africa areas.	
[A] ⚠	QLPA47ELC	"
	*For Australia.	
		COILS
L1, 2	QLM9Z7	MPX Filter
L3, 4	QLQM0333	Record Equalizer Coil
L5, 6	QLQC0331	Bias Trap Coil
L301	QLB0188	Bias Oscillation Coil
		SWITCHES
S1	QSSI205T	Slide Switch (Record/Playback Select)
S2	QES1490 "Silver Type"	Lever Switch (Tape Select)
	QES1485 "Black Type"	"
S3	QES1492 "Silver Type"	Lever Switch (Dolby IN/OUT Select)
	QES1487 "Black Type"	"
S4	QES1491 "Silver Type"	Lever Switch (Input Select)
	QES1486 "Black Type"	"
S5 [D][A] ⚠	QSW2228A	Power Switch
	*For All European areas except United Kingdom and for Australia.	
[N] ⚠	QSW1206AA	"
	*For Asia, Latin America, Middle East and Africa areas.	
S6	QSB0186	Leaf Switch (Muting Switch)
S7 [D] ⚠	QSR1409H	AC Power Voltage Select Switch
	*For All European areas except United Kingdom.	
[N] ⚠	QSR1407H	"
	*For Asia, Latin America, Middle East and Africa areas.	
		JACKS
J1	QJA0257H	Microphone Jack
J2	QEJ5002S	Line IN/OUT (DIN)
J3	QJA0249C	Headphone Jack



For all European areas except United Kingdom

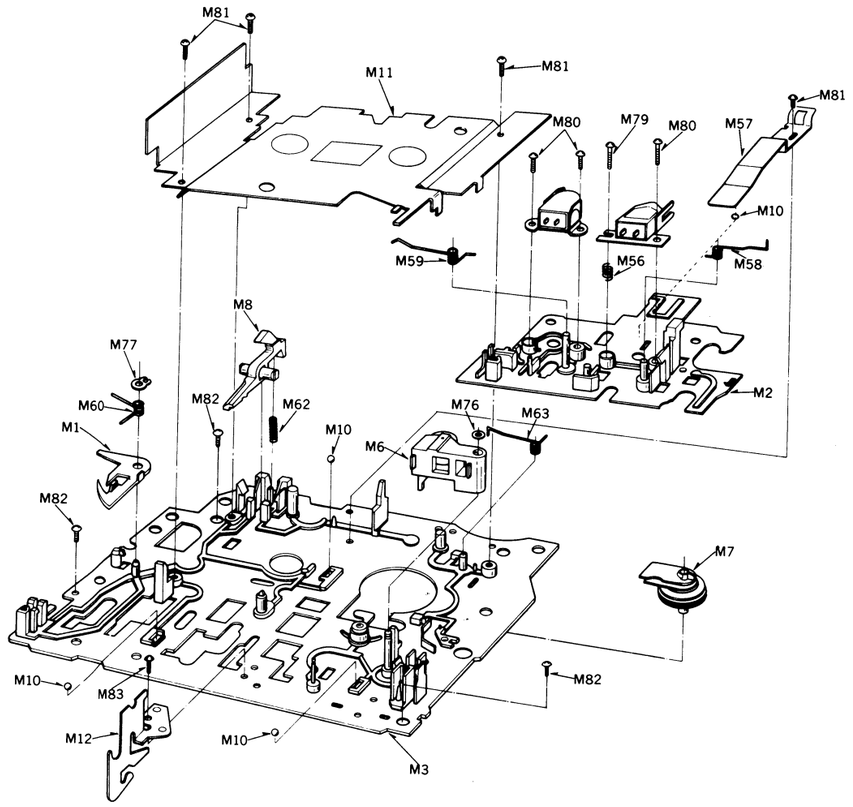


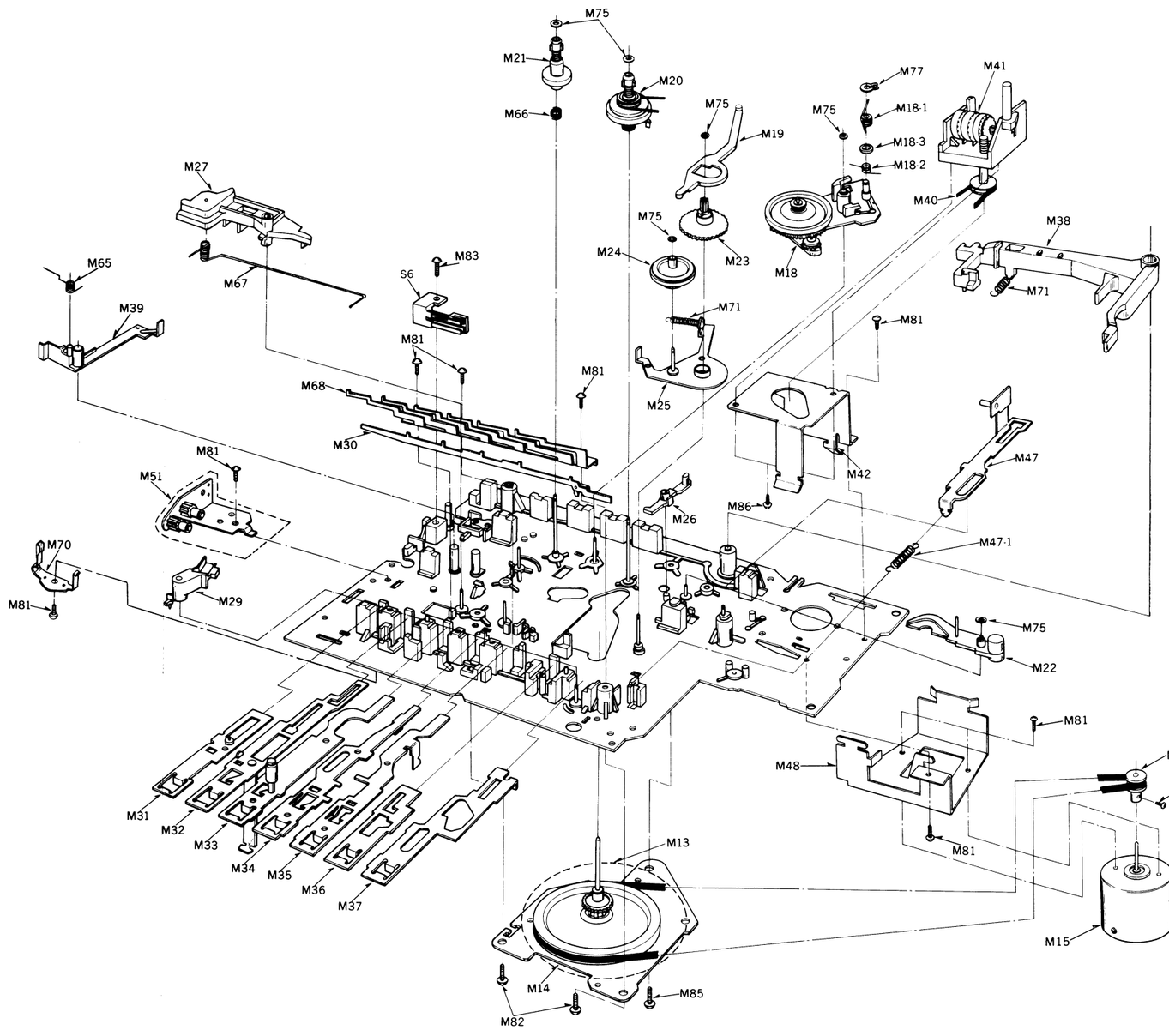
For Asia, Latin America, Middle East and Africa areas.



For Australia.

EXPLODED VIEWS





Ref. No.	Part No.	Part Name & Description
		MECHANICAL PARTS
M1	QML2898	Pause Lock Plate
M2	QMK1612	Head Base Plate
M3	QXK2051	Upper Base Plate Assembly
M6	QXL1057	Pressure Roller Lever Assembly
M7	QXI0098	Takeup Idler Assembly
M8	QML3051	Erase Safety Lever
M10	QDK1012	Steel Ball 2.5φ
M11	QMF2063	Chassis Cover
M12	QMA3169	Shaft Reinforcement Angle
M13	QXF0131	Flywheel Assembly
M14	QXH0239	Flywheel Retainer Assembly
M15	MMC6A2HYA	Motor
M16	QXP0572	Motor Pulley Assembly
M16-1	XSN2+3	Screw ⊕2×3
M17	QDB0236	Flywheel Belt
M18	QXL1136	Fast Forward Arm Assembly
M18-1	QBN1517	Fast Forward Spring
M18-2	QBN1559	Fast Forward Arm Spring
M18-3	QMC0080	Collar
M19	QML3040	Cam Lever
M20	QXD0067	Takeup Reel Table Assembly
M21	QXD0084	Supply Reel Table Assembly
M22	QXL1055	Auto-Stop Lever Assembly
M23	QDG1096	Cam Gear
M24	QXG1026	Auto-Stop Gear Assembly
M25	QXL1037	Gear Lever Assembly
M26	QML3042	Auto-Stop Obstruction Lever
M27	QML3217	Pause Lever
M29	QML3124	Lock Release Arm
M30	QMR1735	Lock Rod Assembly
M31	QXR0342	Pause Rod Assembly
M32	QXR0465	Record Rod Assembly
M33	QXR0344	Playback Rod Assembly
M34	QMR1624	Rewind Rod-A
M35	QMR1623	Fast Forward Rod-A
M36	QMR1622	Stop Rod-A
M37	QMR1621	Eject Rod-A
M38	QML3038	Switch Arm
M39	QML3287	Brake Lever
M40	QDB0240	Counter Belt
M41	QDC0110	Tape Counter
M42	QMA3676	Counter Angle
M47	QXR0403	Eject Rod-B
M47-1	QBT1619	Idler Spring
M48	QMA3414	Motor Angle
M51	QXG1031	Damper Gear Assembly
M55	QBN1515	Connection Spring
M56	QBC1278	Head Spring
M57	QBP1841	Head Base Plate Pressure Spring
M58	QBN1488	Pressure Roller Spring
M59	QBN1481	Playback Spring
M60	QBN1480	Pause Lock Spring
M62	QBC1193	Safety Lever Spring
M63	QBN1513	Idler Spring
M65	QBN1574	Brake Spring
M66	QBC1344	Back Tension Spring
M67	QBN1555	Pause Spring
M68	QBP1664	Operation Rod Spring
M70	QBP1662	Lock Rod Spring
M71	QBT1682	Lock Holding Spring
M75	QBW2008	Snap Washer
M76	QBW2046	〃
M77	XUB4FT	Stop Ring C4φ
M79	QHQ1226	Screw
M80	XSN2+10	Screw ⊕2×10
M81	XTN26+5B	Tapping Screw ⊕2.6×5
M82	XTN3+10B	Tapping Screw ⊕3×10
M83	XTN26+8B	Tapping Screw ⊕2.6×8
M84	XSN26+3	Screw ⊕2.6×3
M85	XTN3+25B	Tapping Screw ⊕3×25
M86	QXK2052	Lower Base Plate

SPECIFICATIONS

Pressure of pressure roller	350±50 gr
Takeup tension • Use cassette torque meter ··· QZZSRKCT	50±15 gr-cm
Wow and flutter • Use test tape ··· QZZCWAT	0.08% (WRMS)

DNA Printed in Japan.